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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,883	10/16/2006	Wei Lih Lim	P30392	7401

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EXAMINER	
HUA, QUAN M	

ART UNIT	PAPER NUMBER
2617	

NOTIFICATION DATE	DELIVERY MODE
04/09/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/597,883	LIM ET AL.	
	Examiner	Art Unit	
	QUAN M. HUA	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *17 and 18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/10/2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/21/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-18 are presented. Claim 17 and 18 are subjected to restriction requirement. Claims 1-16 are elected for examination.

Election/Restrictions

2. Claims 17 and 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/17/2008.

3. Applicant's election with traverse of Claims 1-16 in the reply filed on 12/17/2008 is acknowledged. The traversal is on the ground(s) that the Applicant insists that "there is no serious burden on the Examiner" in present application, and "only two claims are being eliminated form consideration" and due to their commonality of subject matter. Applicant further provides argument to assert the commonality of subject matter based on that each of the restricted independent claims deal with transmitting a bit stream from first station to second station by using at least first and second antennas. This is not found persuasive because Group 1 describes steps of bit stream stratification and applied the bits to the antennas, thus not involving a poll frame with ID data that identifying the first station and frequency set ID nor a particular bit stream structure that has a frequency set and a training sequence other than the stratified that stream in such a process. Thus it would have been a burden to the Examiner to perform extra searches outside of the scope of Group 1.

The requirement is still deemed proper and is therefore made FINAL.

Priority

4. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/587883, filed on 10/16/2006.

Information Disclosure Statement

5. The information disclosure statement (IDS) was submitted on 11/21/2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei (EP Publication No. 0486729) in view of Foschini et al. (Pub. No US 2002/0142723).

As to Claims 1 and 9:

Wei teaches *a method for transmitting a bit stream by using at least first and second antennas comprising*. See Abstract Paragraph (57) .

- *dividing said bit stream (See Figure 14) at least into a first sub stream (Figure 14, See Item 1311) and a second sub stream (See Item 1312);*
- *dividing each of said sub streams (See Figure 14) into at least first (See Figure 14, Item 1321) and second segments (Figure 14, See Item 1322).*
- *dividing each of said segments (See Figure 14, item 1321, 1322) into a plurality of fragments, (Figure 14, See Items 1341 and 1342).*
- *processing said plurality of fragments in one segment from said first sub stream; (*Figure 1, Item 21s and 25)
- *processing said plurality of fragments in one segment from said second sub stream*; (See Figure 1, Item 21 and 25)
- *Applying the processed fragments (Figure 1, item 21 and 25)* and first sub stream (Figure 14, item 1311).

Wei does not expressively teach first antenna and second antenna.

Foschini, however, in the same technical field teaches first antenna *(See Foschini, Figure 6, Item 105-1)and applying the processed fragments in said second sub stream to said second antenna (See Foschini, Figure 6, Item 105-2) and second antenna (Figure 6, item 105-2).*

Thus it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Wei with the teachings of Foschini to include "the first and second antenna" with the motivation to

produce random scattering propagation environments increasing the number of antennas at the receiver or at least the transmitter or both, thereby producing a larger Shannon limit, i.e. a larger error free maximum information rate (Foschini, Paragraph [0003]).

8. Claims 2 and 5, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei (EP Publication No. 0486729) in view of Foschini et al. (Pub. No US 2002/0142723) and in further view of Baker et al. (Pub. No. US 2002/0067309).

As to Claim 2 and Claim 10:

Baker teaches *a method as claimed in claim 1, wherein said processing is a spatial multiplexing coding*. See at least Figure 1, and Paragraph [0004]

Wei and Foschini in combination teach limitations as applied above but does not expressively disclose a spatial multiplexing coding being used to process data.

Baker however teaches such limitation. See reference recited above.

Wei and Foschini in combination and Baker teach data division and MIMO technology. Thus it would have been obvious to one of ordinary skill in the art to combine Wei, Foschini, and Baker, as Baker states that the usage of spatial multiplexing would enhance a MIMO system and increase the robustness of connection and provide complete data transmission. Furthermore, spatial multiplexing is well-known to person skilled in the art as common technique in MIMO.

As to Claim 5 and Claim 13:

Wei teaches *a method as claimed in claim 2, wherein said processing comprises transforming each fragment to a transmission signal to be carried in a first predetermined frequency.* See Wei, Figure 1, step 25 wherein the modulation of data signal with carrier wave.

9. Claims 3, 6, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei (EP Publication No. 0486729) in view of Foschini et al. (Pub. No US 2002/0142723) and in further view of Wu et al. (US 2002/0122381).

As to Claim 3 and Claim 11:

A method as claimed in claim 1, wherein said processing is a space time block coding. See at least Wu, Pages 2-3, Paragraph [0027] and Figure 1

Wei and Foschini in combination does not expressively disclose the above limitation.

Wu however teaches a space time block coding in signal processing. See Wu reference above.

Wei, Foschini, and Wu teach the same technical field of data stratification for transporting in MIMO configuration.

Thus it would have been obvious to one of ordinary skill in the art to combine Wei, Foschini and Wu, as Wu states that using diversity technique such as space-time block coding based diversity would be more desirable than older

method such as OFDM due to its ability to reduce/compensates for distortion in Paragraph [0009].

With regard to claim 6, it is obvious to one of ordinary skill in the art that data signals are to be modulated to be sent via predetermined channels, as confirmed by at least Wu, Paragraph [0027].

As to Claim 6 and 14:

A method as claimed in claim 3, wherein said processing comprises transforming a portion of each fragment to a transmission signal to be carried in a first predetermined frequency, and a remaining portion of the fragment to a transmission signal to be carried in said first predetermined frequency , see at least Wu, Paragraph [0027].

Furthermore, it is obvious to one of ordinary skill in the art that data signals are to be modulated through modulators to be sent via predetermined channels.

10. Claim 4, 7, 8, 12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei (EP Publication No. 0486729) in view of Foschini et al. (Pub. No US 2002/0142723) and in further view of Chang et al. (US 2004/0114506)

As to Claims 4 and 12:

A method as claimed in claim 1, wherein said processing is a space frequency block coding. Chang, Page 1, Paragraph [0006]

Wei and Foschini in combination do not teach a space frequency block coding being used to process data.

Chang however teaches such limitation. See reference cited above.

Wei, Foschini, and Chang teach data stratification and MIMO structure.

Thus it would have been obvious to one of ordinary skill in the art to combine Wei, Foschini and Chang, as Chang states that using multi-antenna OFDM technologies such as space-frequency block coding would improve link budget and eliminate inter-symbol interference in at least Paragraph [0006].

As to Claims 8 and 16:

Wei and Foschini in combination teach a *method as claimed in claim 1, wherein said processing comprises:*

Transforming each fragment to a transmission signal; See Wei, Figure 1, step 24-25.

Distributing the transmission signal; See Wei, Figure 1, step 25-30

IFFT processing the transmission signal. See at least Chang, Paragraph [0004]

Wei and Foschini do not explicitly disclose IFFT processing.

Chang over discloses such limitation, see Chang's reference cited above . Wei, Foschini, and Chang teach the same technical field of data stratification and MIMO structure.

Thus it would have been obvious to one of ordinary skill in the art to combine Wei, Foschini and Chang, as Chang states that the use of IFFT would allow rapid realization of modulation/demodulation process.

As to Claims 7 and 15:

A method as claimed in claim 4, wherein said processing comprises transforming each fragment to a transmission signal to be carried in a first predetermined frequency, and the same fragment to a transmission signal to be carried in a second predetermined frequency.

Regarding Claim 7 and 15, the claimed subject matter is obvious to one skilled in the art as, in diversity technology such as space-frequency block codes, data transmitted on different carriers are various version of the same input data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUAN M. HUA whose telephone number is (571)270-7232. The examiner can normally be reached on Monday through Friday - 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571)-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diane Mizrahi/
Primary Examiner, Art Unit 2617

/QUAN M HUA/
Examiner, Art Unit 2617